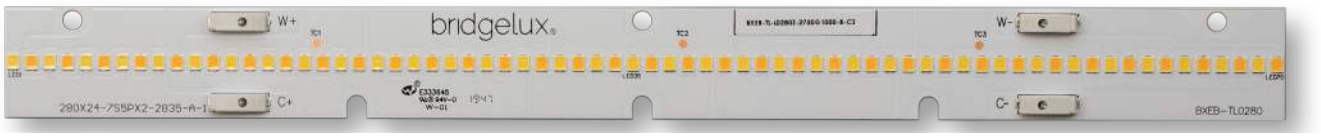


Bridgelux® Vesta™ Tunable Linear Gen 3 1 SMD Row

Product Data Sheet DS136

Lengths: 280mm, 560mm, 1120mm

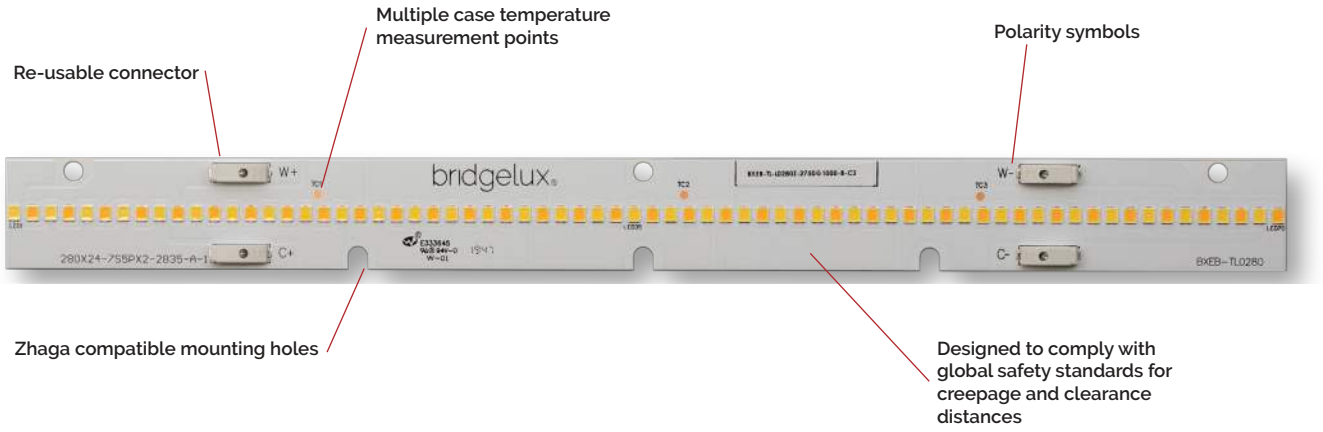
CRIs: 80, 90

CCT Ranges: 1800K-3000K, 1800K-4000K, 2700-5000K, 2700-6500K

FIVE YEAR Warranty™

Product Feature Map

Bridgelux Vesta Series Tunable White Linear (TL) modules are fully engineered devices that provide consistent thermal and optical performance on an engineered mechanical platform. The linear products incorporate several features to simplify design integration and assembly. Please visit www.bridgelux.com for more information on the Vesta Series family of products.



Product Nomenclature

The part number designation for Bridgelux Vesta Series TL Gen 3 with 1 SMD row is explained as follows:

1,2,3,4		5,6		7,8,9,10,11,12		13,14,15,16	17	18,19,20,21		22		23	24
BXEB	-	TL	-	L0560Z	-	2750	G	2000	-	B	-	C	3

Product Family

Tunable White Linear

Nominal Dimensions
L = Linear
0280 = 280mm long
0560 = 560mm long
1120 = 1120mm long
Z= Zhaga compatible width (24 mm)

CCT Range
18 = 1800K
27 = 2700K
30 = 3000K
40 = 4000K
50 = 5000K
65 = 6500K

Minimum CRI
E = 80 CRI
G = 90 CRI

Flux Designator
1000 = 1xxx lumen range
2000 = 2xxx lumen range
4000 = 4xxx lumen range

Configuration

Version
C = Gen 3

Color Accuracy
3 = 3 SDCM

Product Selection Guide

Table 1: Product Performance (T_c = 25° C)

Part Number	Nominal CCT[1] (K)	Minimum CRI	Typical Flux[2,3] (lm)	Nominal Drive Current (mA)	Typical V_f (V)	Typical Power (W)	Typical Efficacy (lm/W)
BXEB-TL-L0280Z-2750E1000-B-C3	2700	80	1219	375	19.7	7.4	165
	5000		1362				184
BXEB-TL-L0280Z-2765E1000-B-C3	2700		1219				165
	6500		1346				182
BXEB-TL-L0280Z-1830G1000-B-C3	1800	90	755				102
	3000		1081				146
BXEB-TL-L0280Z-1840G1000-B-C3	1800		755				102
	4000		1153				156
BXEB-TL-L0280Z-2750G1000-B-C3	2700		1040				141
	5000		1153				156
BXEB-TL-L0280Z-2765G1000-B-C3	2700		1040				141
	6500		1153				156
BXEB-TL-L0560Z-2750E2000-B-C3	2700	80	2438	750	19.7	14.8	165
	5000		2723				184
BXEB-TL-L0560Z-2765E2000-B-C3	2700		2438				165
	6500		2693				182
BXEB-TL-L0560Z-1830G2000-B-C3	1800	90	1510				102
	3000		2162				146
BXEB-TL-L0560Z-1840G2000-B-C3	1800		1510				102
	4000		2305				156
BXEB-TL-L0560Z-2750G2000-B-C3	2700		2081				141
	5000		2305				156
BXEB-TL-L0560Z-2765G2000-B-C3	2700		2081				141
	6500		2305				156
BXEB-TL-L1120Z-2750E4000-B-C3	2700	80	4876	750	39.4	29.6	165
	5000		5447				184
BXEB-TL-L1120Z-2765E4000-B-C3	2700		4876				165
	6500		5386				182
BXEB-TL-L1120Z-1830G4000-B-C3	1800	90	3019				102
	3000		4325				146
BXEB-TL-L1120Z-1840G4000-B-C3	1800		3019				102
	4000		4610				156
BXEB-TL-L1120Z-2750G4000-B-C3	2700		4162				141
	5000		4610				156
BXEB-TL-L1120Z-2765G4000-B-C3	2700		4162				141
	6500		4610				156

Notes for Table 1:

1. Nominal CCT as defined by ANSI C78.377-2011.
2. Data is at nominal test current where temperature of center case temperature point T_c = 25° C.
3. Bridgelux maintains a ± 7% tolerance on typical flux data (typical SMD flux bins)

Electrical Characteristics

Table 2: Electrical Characteristics

Part Number	Drive Current (mA)	Forward Voltage T_{c2} = 25° C (V) [1, 2, 3]			Typical Coefficient of Forward Voltage[4] $\Delta V_f/\Delta T$ (mV/° C)	Driver Selection Voltages[5] (V)	
		Minimum	Typical	Maximum		V_f Min, Hot T_{c2} = 85° C (V)	V_f Max, Cold T_{c2} = -40° C (V)
BXEB-TL-L0280Z-xxxxE1000-B-C3	375	18.3	19.7	21.1	-5.4	18.0	21.4
	750	19.3	20.8	22.3		19.0	22.6
BXEB-TL-L0280Z-xxxxG1000-B-C3	375	18.3	19.7	21.1	-5.4	18.0	21.4
	750	19.3	20.8	22.3		19.0	22.6
BXEB-TL-L0560Z-xxxxE2000-B-C3	750	18.3	19.7	21.1	-5.4	18.0	21.4
	1500	19.3	20.8	22.3		19.0	22.6
BXEB-TL-L0560Z-xxxxG2000-B-C3	750	18.3	19.7	21.1	-5.4	18.0	21.4
	1500	19.3	20.8	22.3		19.0	22.6
BXEB-TL-L1120Z-xxxxE4000-B-C3	750	36.6	39.4	42.2	-10.8	36.0	42.9
	1500	38.7	41.6	44.5		38.0	45.2
BXEB-TL-L1120Z-xxxxG4000-B-C3	750	36.6	39.4	42.2	-10.8	36.0	42.9
	1500	38.7	41.6	44.5		38.0	45.2

Notes for Table 2:

1. Voltage minimum and maximum are provided for reference only and are not a guarantee of performance.
2. Bridgelux maintains a tolerance of ± 0.1 V on forward voltage data.
3. This product has been designed and manufactured per IEC 62031:2014. The working voltage designated for the insulation is 60 Vdc. The maximum allowable voltage across the module must be determined in the end product application.
4. Typical coefficient of forward voltage tolerance is ± 0.1 mV for nominal current.
5. V_f min hot and max cold values are provided as reference only and are not guaranteed. These values are provided to aid in driver design and selection over the operating range of the product.

Absolute Maximum Ratings

Table 3: Maximum Ratings

Parameter	Maximum Rating		
Storage Temperature	-40˚C to +85˚C		
Operating Case Temperature[2] (T_c)	85˚C		
Soldering Temperature	350˚C or lower for a maximum of 5 seconds		
Maximum Reverse Voltage	Modules are not designed to be driven in reverse bias		
	BXEB-TL-L0280Z-xxxxy1000-B-C3	BXEB-TL-L0560Z-xxxxy2000-B-C3	BXEB-TL-L1120Z-xxxxy4000-B-C3
Drive Current, Maximum Combined[3]	750 mA	1500 mA	1500 mA
Drive Current, Maximum Per Channel[3]	750 mA	1500 mA	1500 mA

Notes for Table 3

1. For IEC 62717 requirement, please consult your Bridgelux sales representative.
2. Lumen maintenance (L70) and lifetime predictions are valid for drive current and case temperature conditions used for LM-80 testing as included in the applicable LM-80 test report for the SMDs used in the modules. Contact your Bridgelux sales representatives for LM-80 report.
3. The Maximum Combined Drive Current is defined as the sum of the drive currents in both channels.
   - Example #1: If 750mA is applied to the 2700K (warm white) channel of the BXEB-TL-L0280Z-27xxy1000-B-C3 module, then 0mA may be applied to the alternate cool white channel.
   - Example #2: If 1000mA is applied to the cool white channel of the BXEB-TL-L0560Z-27xxy2000-B-C3 module, then a maximum of 500mA may be applied to the warm white channel.

Performance Curves

Figure 1: Current vs. Forward Voltage (280mm only)

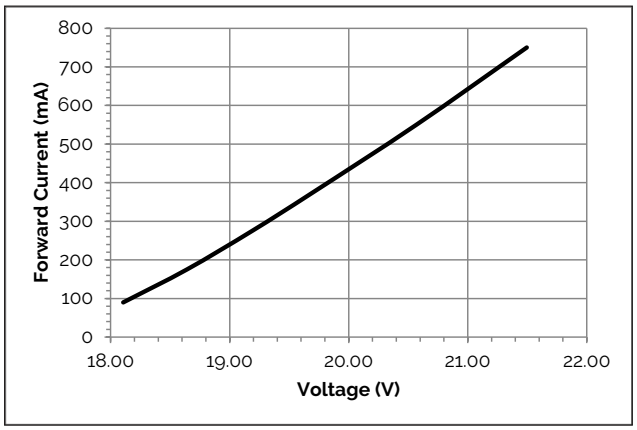


Figure 2: Flux vs. Current (280mm only)

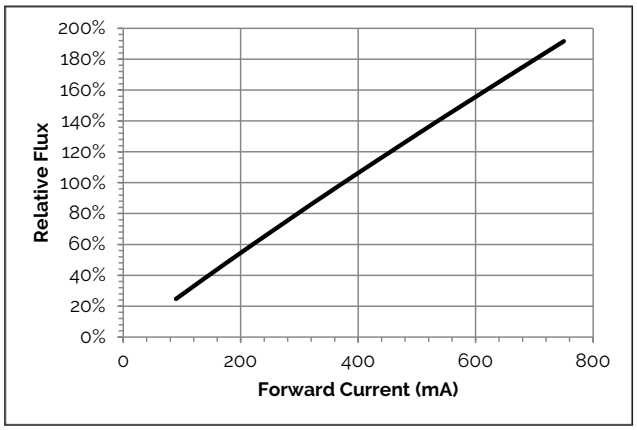


Figure 3: Current vs. Forward Voltage (560mm only)

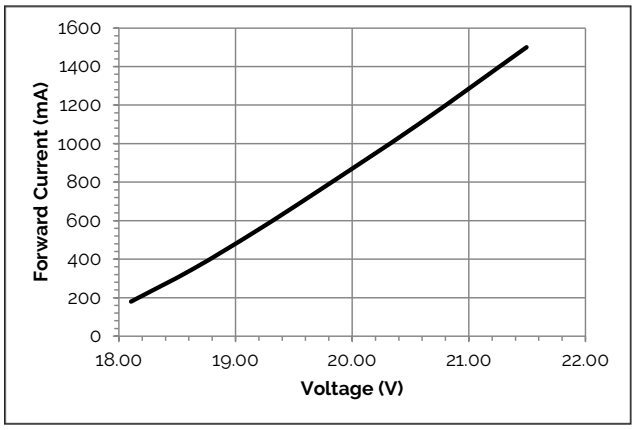


Figure 4: Flux vs. Current (560mm only)

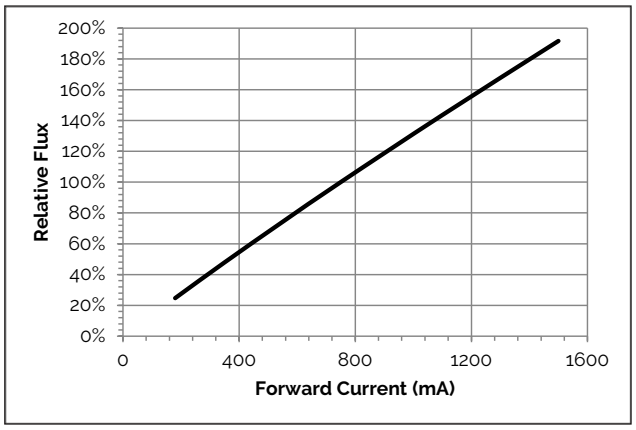


Figure 5: Current vs. Forward Voltage (1120mm only)

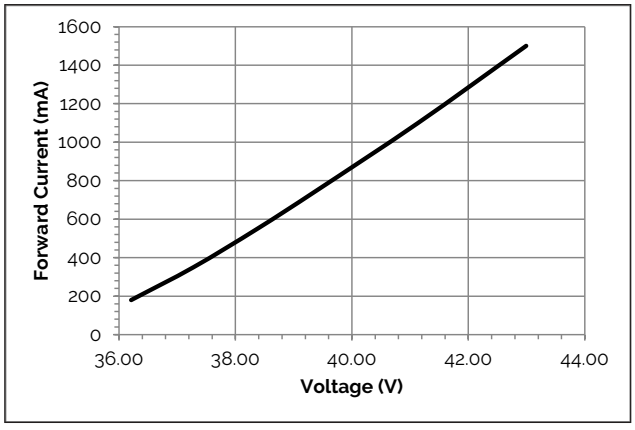
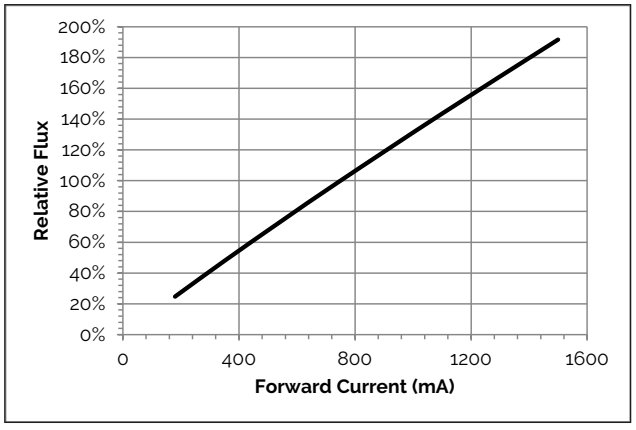


Figure 6: Flux vs. Current (1120mm only)



Notes for Figures 1-6;

1. All measurements were performed at T_c=25C

Performance Curves

Figure 7: Flux vs. Current Ratio (2700K-5000K)

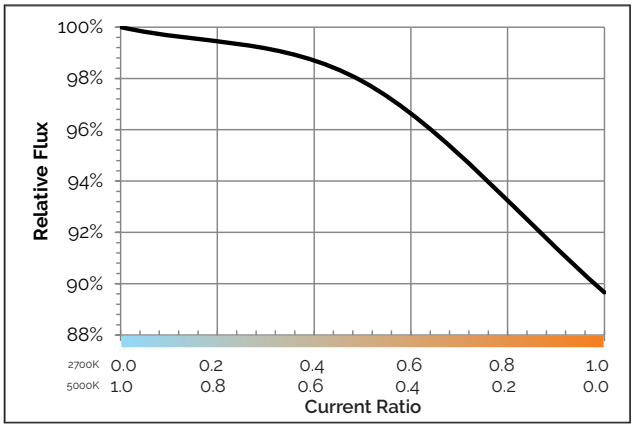


Figure 8: CCT vs. Current Ratio (2700K-5000K)

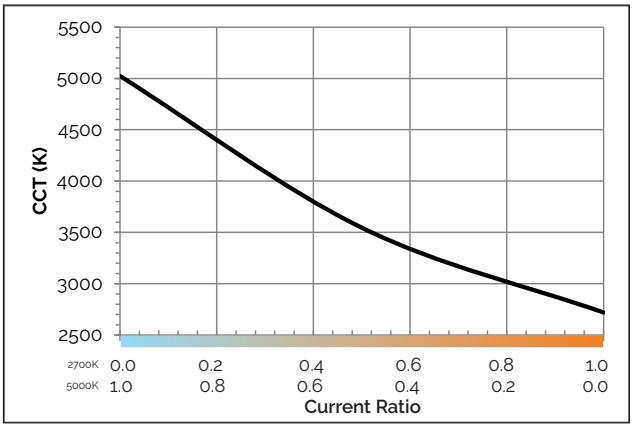


Figure 9: Flux vs. Current Ratio (2700K-6500K)

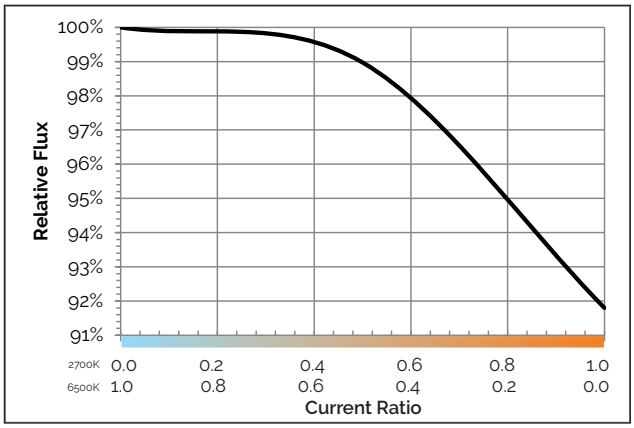


Figure 10: CCT vs. Current Ratio (2700K-6500K)

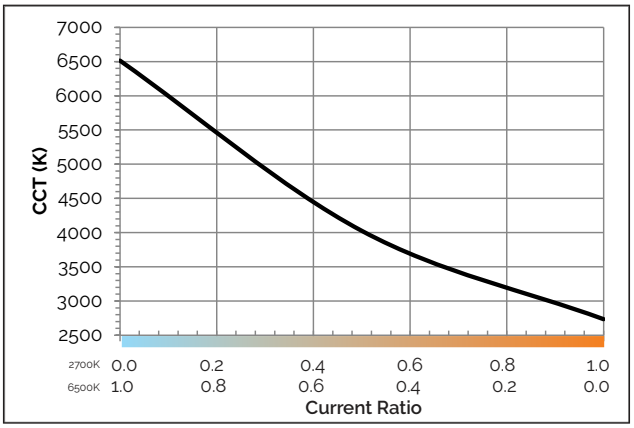


Figure 11: Flux vs. Current Ratio (1800K-3000K)

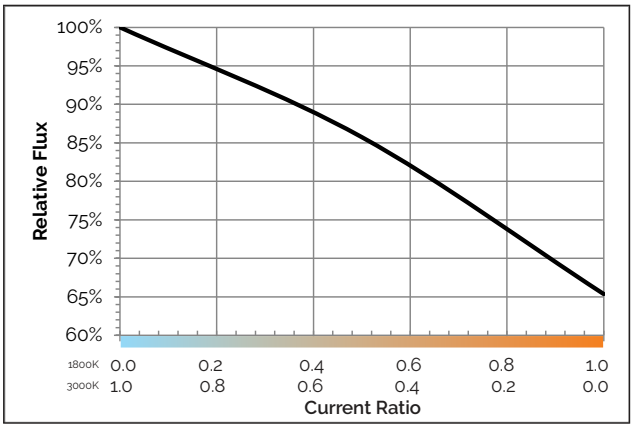
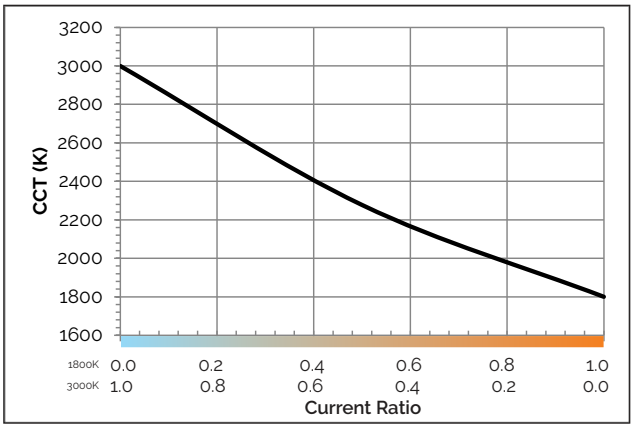


Figure 12: CCT vs. Current Ratio (1800K-3000K)



Notes for Figures 7-12;

1. All measurements were performed at T_c=25C
2. Current Ratio is calculated by dividing the channel with the lower drive current by the channel with the higher drive current. For example if the CW channel is operated at 1200mA and the WW channel is operated at 300mA, then the WW current ratio = 300/1200 = 0.25

Performance Curves

Figure 13: Flux vs. Current Ratio (1800K-4000K)

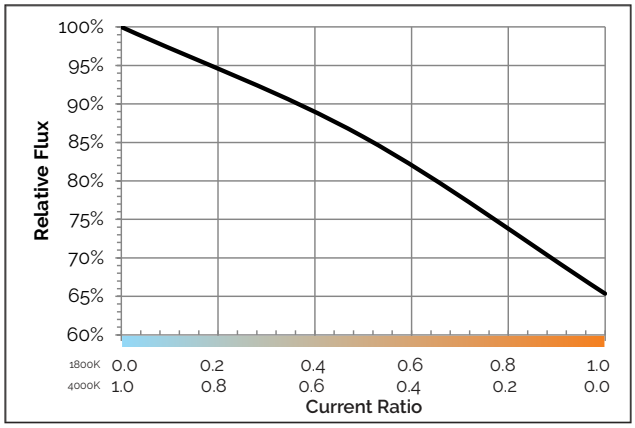
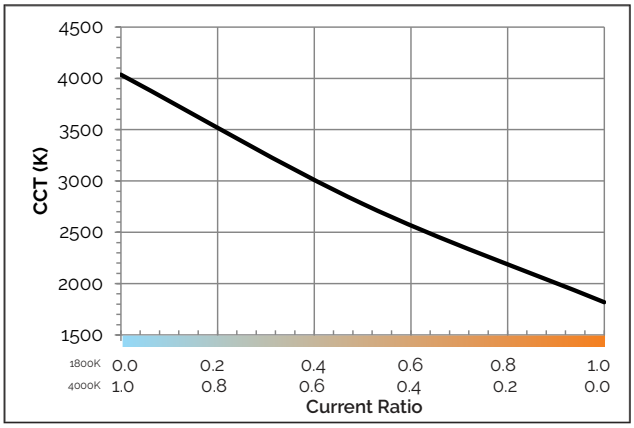


Figure 14: CCT vs. Current Ratio (1800K-4000K)



Notes for Figures 13-14;

1. All measurements were performed at T_c=25C
2. Current Ratio is calculated by dividing the channel with the lower drive current by the channel with the higher drive current. For example if the CW channel is operated at 1200mA and the WW channel is operated at 300mA, then the WW current ratio = 300/1200 = 0.25

Figure 15: Voltage vs Case Temperature

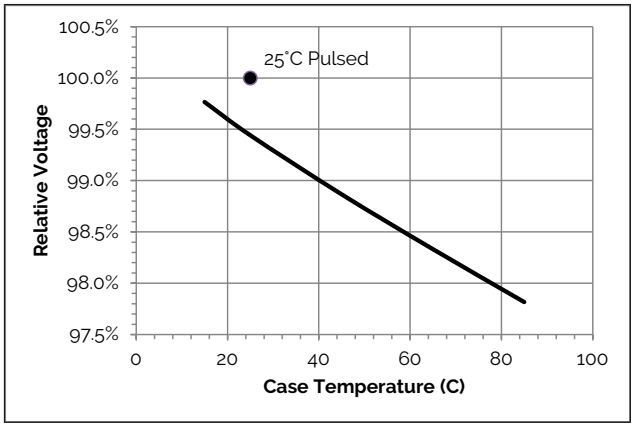


Figure 16: Flux vs Case Temperature (2700K-5000K)

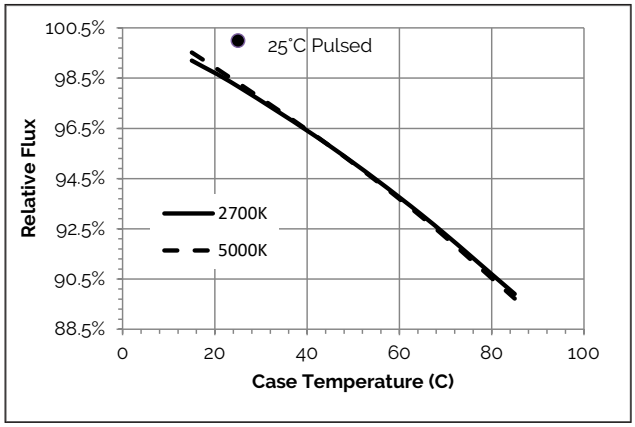


Figure 17: Flux vs Case Temperature (2700K-6500K)

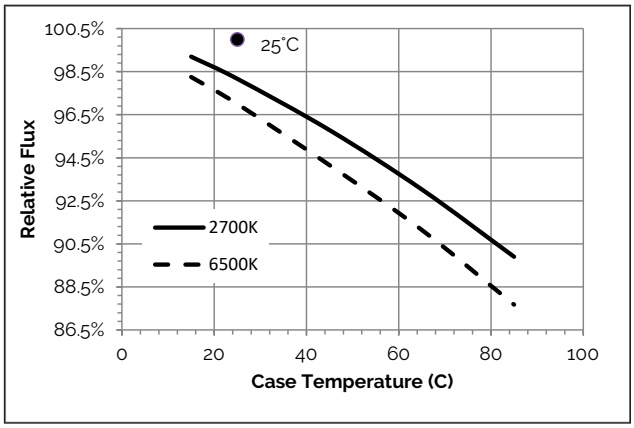
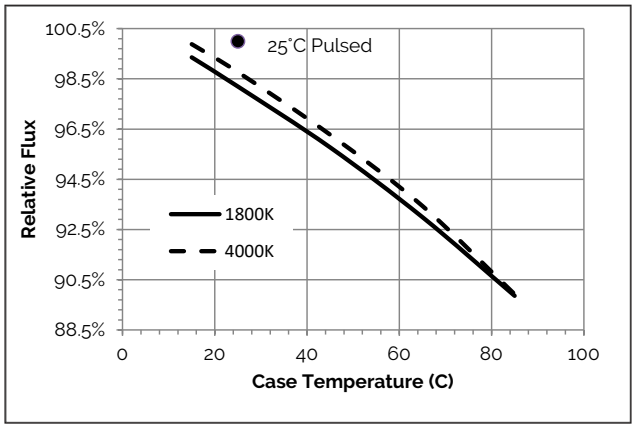
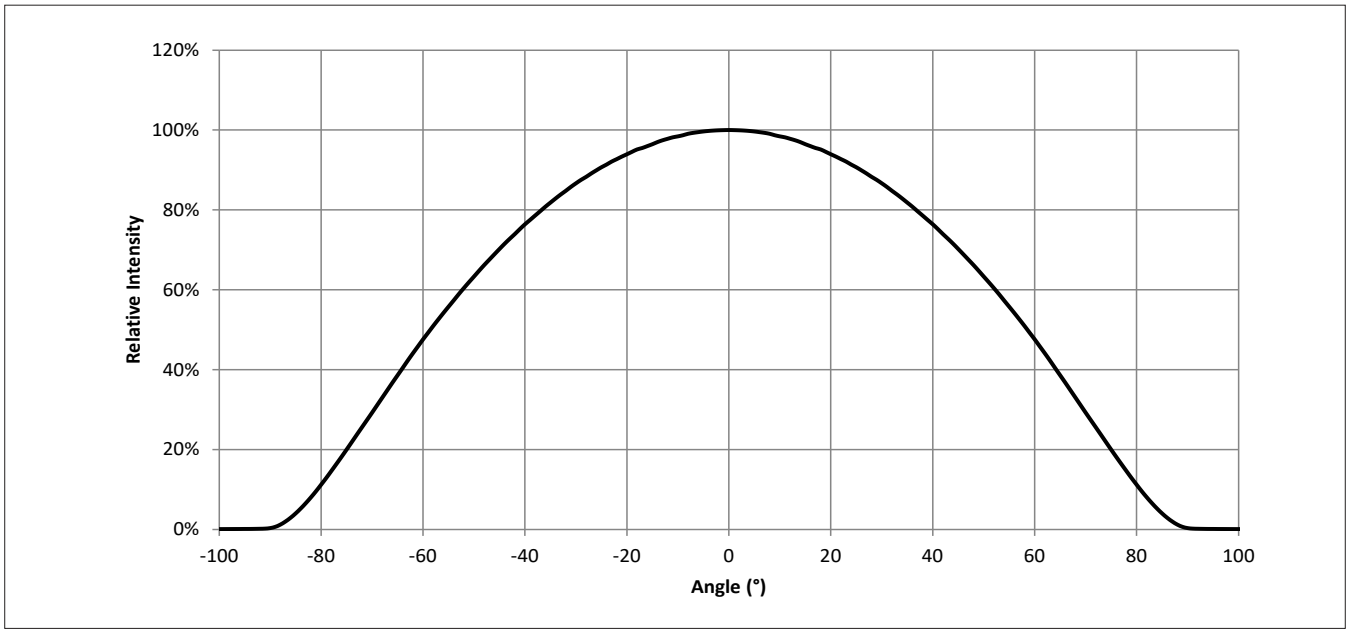


Figure 18: Flux vs Case Temperature (1800K-4000K)



Typical Radiation Pattern

Figure 19: Typical Spatial Radiation Pattern



Notes for Figure 19:

1. Typical viewing angle is 120°.FWHM
2. The viewing angle is defined as the full-width off-axis angle where the intensity is 50% of the peak value.

Typical Color Spectrum

Figure 20: Typical Color Spectra, 80 CRI

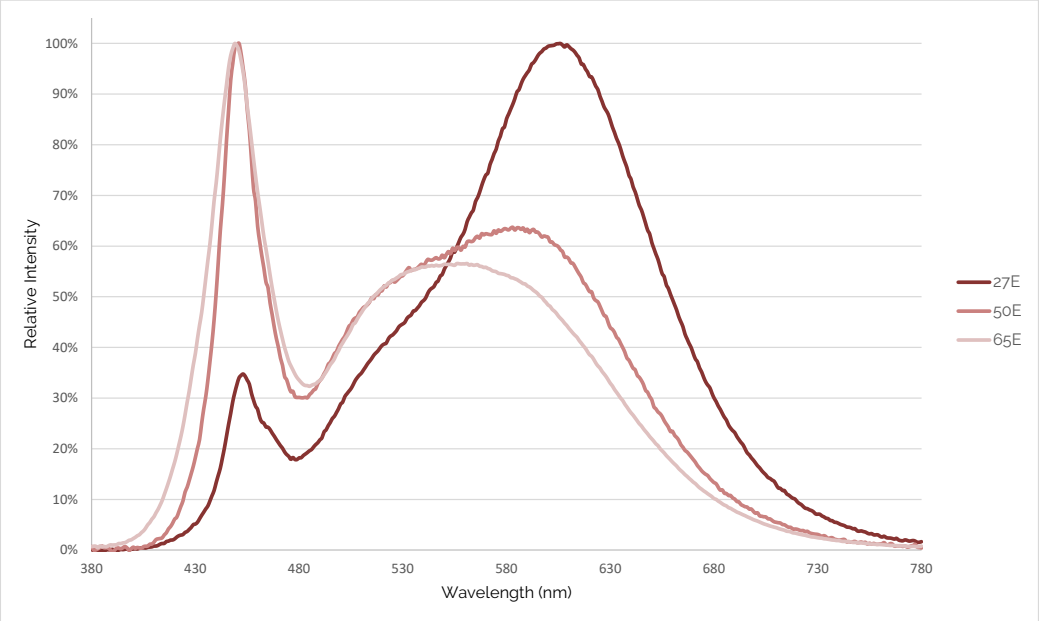
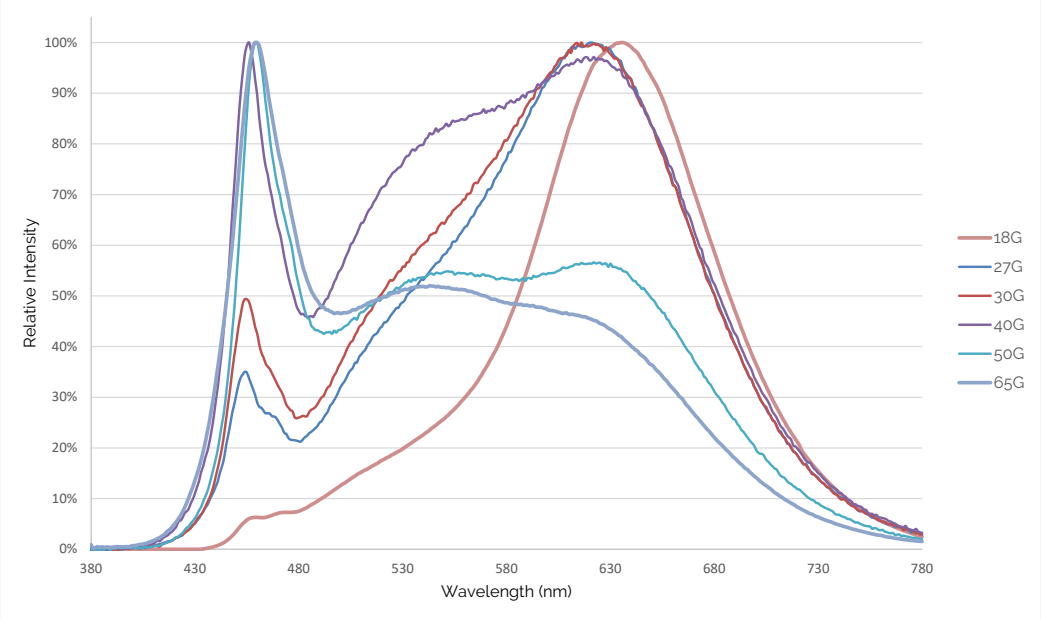


Figure 21: Typical Color Spectra, 90 CRI



Note for Figures 20 & 21:

1. Color spectra measured at nominal current for T_c = 65°C

Mechanical Dimensions

Figure 22: Drawing Overview for 280mm

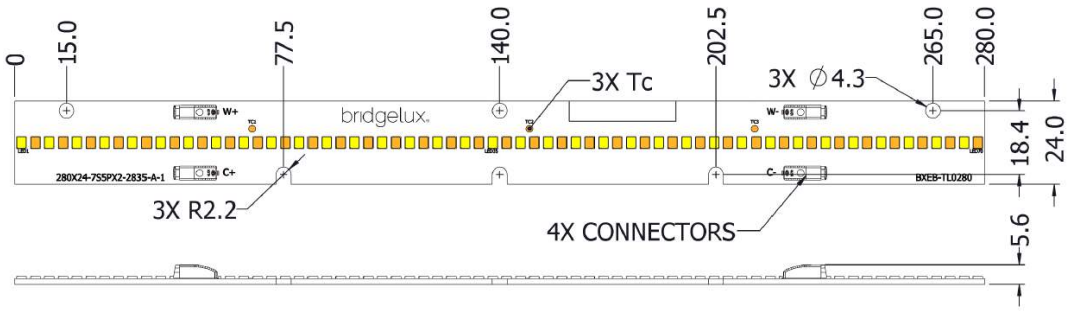


Figure 23: Drawing Overview for 560mm

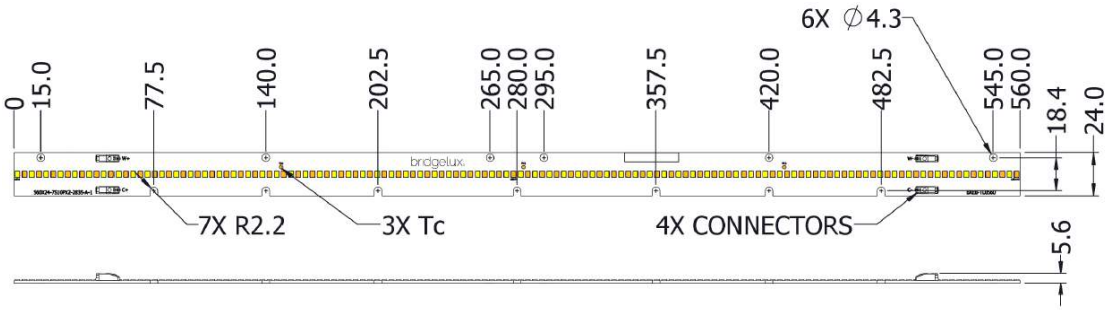
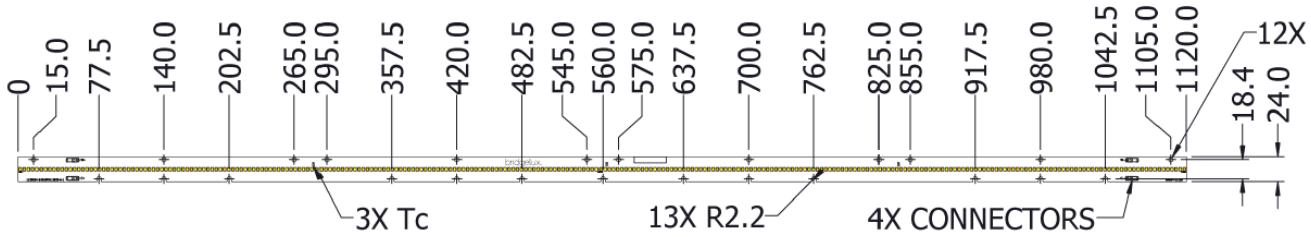


Figure 24: Drawing Overview for 1120mm



Notes for Figures 22, 23 & 24:

1. Solder pads are labeled "+" to denote positive polarity, and "-" to denote negative polarity.
2. "WW" labels stand for Warm White and refer to the low CCT SMDs on the module (i.e. 1800K or 2700K). "CW" labels stand for Cool White and refer to the high CCT SMDs on the module (i.e. 3000K, 4000K, 5000K, or 6500K)
3. Dimensions are in millimeters.
4. Refer to Bridgelux assembly drawing 15-000718, 15-000719, and 15-000720 for complete product configuration

Table 5: Module Dimensions & Connector Wiring

Parameter	BXEB-TL-L0280Z-xxxxy1000-B-C3	BXEB-TL-L0560Z-xxxxy2000-B-C3	BXEB-TL-L1120Z-xxxxy4000-B-C3
Linear length	280.0 mm	560.0 mm	1120.0 mm
Linear width	24 mm		
Overall thickness	5.6 mm		
PCB thickness	1.6 mm		
Input wire cross-section	18-24 AWG		
Wire strip length	7-9 mm		

Color Binning Information

Figure 25: 3 SDCM Color Bins in CIE 1931 xy Color Space

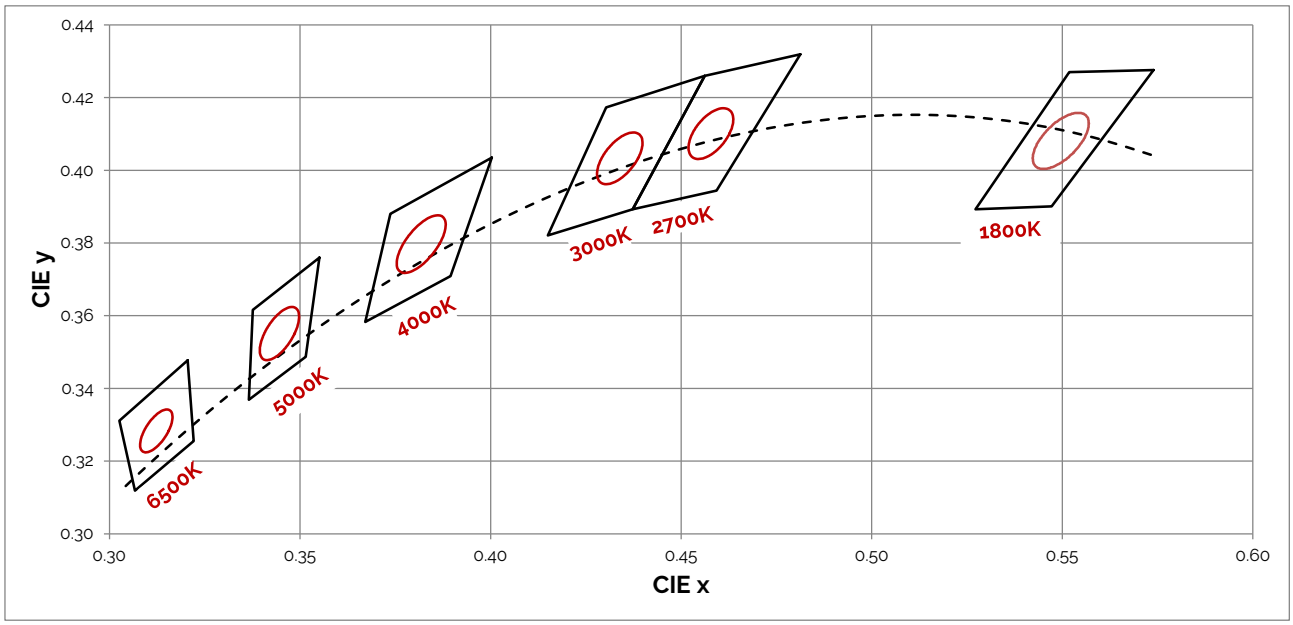


Table 6: Bin Coordinates and Associated Typical CCT

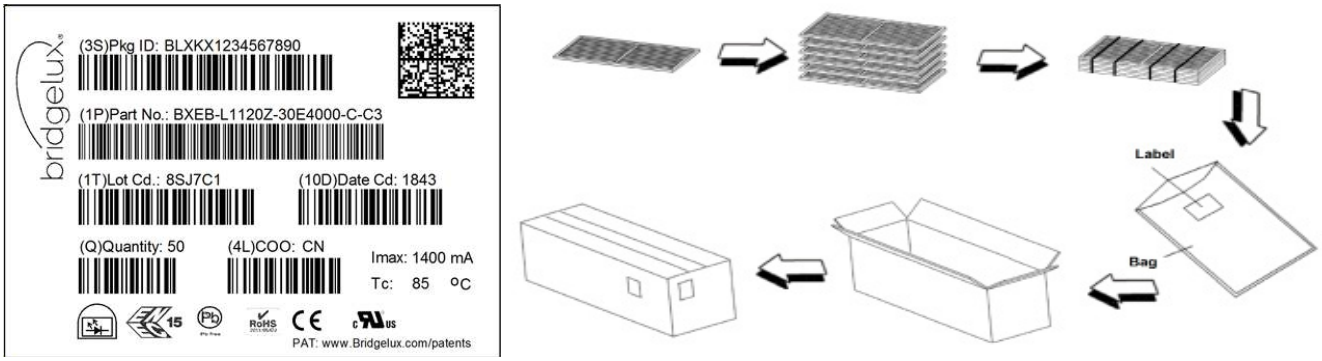
CCT	Color Consistency	CIE Center Point (x, y)	Corresponding CCT Range
1800K	3 SDCM	(0.550, 0.408)	1750K - 1840K
2700K	3 SDCM	(0.458, 0.410)	2651K - 2794K
3000K	3 SDCM	(0.434, 0.403)	2968K - 3136K
4000K	3 SDCM	(0.382, 0.380)	3851K - 4130K
5700K	3 SDCM	(0.345, 0.355)	4835K - 5215K
6500K	3 SDCM	(0.312, 0.328)	6250K - 6745K

Notes for Table 6

1. Color binning at solder point temperature Tsp of SMDs at 25°C for 80 CRI and 85°C for 90 CRI.
2. Bridgelux maintains a tolerance of ± 0.007 on x and y color coordinates in the CIE 1931 color space.
3. Quadrangular ANSI bins shown for reference only

Packaging and Labeling

Figure 26: Vesta Series Packaging and Labeling



Note: This label & packaging diagram is for illustration only and may differ from actual product label and packaging for this product

Table 7: Packaging Structure

Box Parameter	L0280 modules	L0560 modules	L1120 modules
Quantity	200	100	100
Dimension	34.6 cm x 29.6 cm x 16.9 cm	60.0 cm x 19.4 cm x 16.9 cm	115.9 cm x 19.4 cm x 16.9 cm

Figure 27: Product Labeling

Bridgelux Vesta Series modules contain a label on the front to help with product identification. In addition to the product identification markings, Bridgelux Vesta Series modules also contain markings for internal Bridgelux manufacturing use only. The image below shows which markings are for customer use and which ones are for Bridgelux internal use only. The Bridgelux internal manufacturing markings are subject to change without notice, however these will not impact the form, function or performance of the module.

Design Resources

Application Notes

Bridgelux has developed a comprehensive set of application notes and design resources to assist customers in successfully designing with the Vesta Series product family. For a list of resources under development, visit www.bridgelux.com.

Optical Source Models

Optical source models and ray set files are available for all Bridgelux products. For a list of available formats, visit www.bridgelux.com.

3D CAD Models

Three dimensional CAD models depicting the product outline of all Bridgelux Vesta Series modules are available in both IGES and STEP formats. Please contact your Bridgelux sales representative for assistance.

Precautions

CAUTION: CHEMICAL EXPOSURE HAZARD

Exposure to some chemicals commonly used in luminaire manufacturing and assembly can cause damage to the LED linear. Please consult Bridgelux Application Note for additional information.

CAUTION: EYE SAFETY

Eye safety classification for the use of Bridgelux Vesta Series is in accordance with IEC/TR62778: Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires. Vesta Series linears are classified as Risk Group 1 (TBD) when operated at or below the maximum drive current. Please use appropriate precautions. It is important that employees working with LEDs are trained to use them safely.

CAUTION: RISK OF BURN

Do not touch the Vesta Series modules during operation. Allow the linear to cool for a sufficient period of time before handling. The Vesta Series maodules may reach elevated temperatures such that could burn skin when touched.

CAUTION

CONTACT WITH LIGHT EMITTING SURFACE (LES)

Avoid any contact with the LES. Do not touch or apply stress to the module SMD LESs (yellow phosphor resin area). Contact may cause damage to the module.

Optics and reflectors must not be mounted in contact with the LES (yellow phosphor resin area).

Optical devices may be mounted on the top surface of the module. Use the mechanical features of the module housing, edges and/or mounting holes to locate and secure optical devices as needed.

Disclaimers

STANDARD TEST CONDITIONS

Unless otherwise stated, module testing is performed at the nominal drive current.

MINOR PRODUCT CHANGE POLICY

The rigorous qualification testing on products offered by Bridgelux provides performance assurance. Slight cosmetic changes that do not affect form, fit, or function may occur as Bridgelux continues product optimization.

About Bridgelux: Bridging Light and Life™

At Bridgelux, we help companies, industries and people experience the power and possibility of light. Since 2002, we've designed LED solutions that are high performing, energy efficient, cost effective and easy to integrate. Our focus is on light's impact on human behavior, delivering products that create better environments, experiences and returns—both experiential and financial. And our patented technology drives new platforms for commercial and industrial luminaires.

For more information about the company, please visit
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